

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Observation of coherent helimagnons in the Skyrmionic helimagnets¹ JAKE KORALEK, Lawrence Berkeley National Lab, DENNIS MEIER, JAMES HINTON, University of California, Berkeley, ANDREAS BAUER, Technische Universität München, SID PARAMESWARAN, University of California, Berkeley, ASHVIN VISHWANATH, University of California, Berkeley, and Lawrence Berkeley National Lab, CHRISTIAN PFLEIDERER, Technische Universität München, ROOMAMOORTHY RAMESH, University of California, Berkeley, and Lawrence Berkeley National Lab, BOB SCHOENLEIN, Lawrence Berkeley National Lab, JOE ORENSTEIN, University of California, Berkeley, and Lawrence Berkeley National Lab — In MnSi and Fe_{1-x}Co_xSi the interplay between the spin-orbit and exchange interactions leads to a variety of helical magnetically ordered states. Perhaps the most interesting of these is the Skyrmion lattice phase in which the spins form topologically-stabilized vortices which decouple from the host lattice to form their own lattice structure. We use pump-probe reflectivity and Kerr rotation to study the dynamics in these materials, observing coherent collective excitations unique to helimagnets known as helimagnons. Monitoring helimagnon decay in the time-domain directly yields the Gilbert damping parameter in these systems.

¹We acknowledge support through DOE contract No. DE-AC02-05CH11231. C.P. and A.B. acknowledge support through DFG TRR80, DFG FOR960, and ERC AdG (291079, TOPFIT).

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Date submitted: 28 Nov 2012

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